OIPE IAP44
APR 09 2007
PATENT & TRADEMARK OFFICE

SEQUENCE LISTING

<110> Evotec NeuroSciences GmbH

<120> Diagnostic and therapeutic use of the human HIF3alpha gene and proteins for neurodegenerative diseases

<130> 042637wo Me/FM

<140> PCT/EP2004/053573
<141> 2004-12-17

<160> 31

<170> PatentIn Ver. 2.1

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<211> 289
<212> DNA
<213> Artificial Sequence

<220>
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<213> Homo sapiens

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Ser Ala Pro Gln Leu Glu Leu Ile Gly His Ser Ile Phe Asp Phe Ile
50 55 60

His Pro Cys Asp Gln Glu Glu Leu Gln Asp Ala Leu Thr Pro Gln Gln
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Thr Leu Ser Arg Arg Lys Val Glu Ala Pro Thr Glu Arg Cys Phe Ser
85 90 95

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Leu Arg Met Lys Ser Thr Leu Thr Ser Arg Gly Arg Thr Leu Asn Leu
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Lys Ala Ala Thr Trp Lys Val Leu Asn Cys Ser Gly His Met Arg Ala
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Tyr Lys Pro Pro Ala Gln Thr Ser Pro Ala Gly Ser Pro Asp Ser Glu
    130                 135                 140

Pro Pro Leu Gln Cys Leu Val Leu Ile Cys Glu Ala Ile Pro His Pro
145                 150                 155                 160

Gly Ser Leu Glu Pro Pro Leu Gly Arg Gly Ala Phe Leu Ser Arg His
                165                 170                 175

Ser Leu Asp Met Lys Phe Thr Tyr Cys Asp Asp Arg Ile Ala Glu Val
            180                 185                 190

Ala Gly Tyr Ser Pro Asp Asp Leu Ile Gly Cys Ser Ala Tyr Glu Tyr
        195                 200                 205

Ile His Ala Leu Asp Ser Asp Ala Val Ser Lys Ser Ile His Thr Leu
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Leu Ser Lys Gly Gln Ala Val Thr Gly Gln Tyr Arg Phe Leu Ala Arg
225                 230                 235                 240

Ser Gly Gly Tyr Leu Trp Thr Gln Thr Gln Ala Thr Val Val Ser Gly
                245                 250                 255

Gly Arg Gly Pro Gln Ser Glu Ser Ile Val Cys Val His Phe Leu Ile
            260                 265                 270

Ser Gln Val Glu Glu Thr Gly Val Val Leu Ser Leu Glu Gln Thr Glu
        275                 280                 285

Gln His Ser Arg Arg Pro Ile Gln Arg Gly Ala Pro Ser Gln Lys Asp
    290                 295                 300

Thr Pro Asn Pro Gly Asp Ser Leu Asp Thr Pro Gly Pro Arg Ile Leu
305                 310                 315                 320

Ala Phe Leu His Pro Pro Ser Leu Ser Glu Ala Ala Leu Ala Ala Asp
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Pro Arg Arg Phe Cys Ser Pro Asp Leu Arg Arg Leu Leu Gly Pro Ile
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Leu Asp Gly Ala Ser Val Ala Ala Thr Pro Ser Thr Pro Leu Ala Thr
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Arg His Pro Gln Ser Pro Leu Ser Ala Asp Leu Pro Asp Glu Leu Pro
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Val Gly Thr Glu Asn Val His Arg Leu Phe Thr Ser Gly Lys Asp Thr
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<212> PRT
<213> Homo sapiens

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             20                  25                  30

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         35                  40                  45

Ala His Leu Asp Lys Ala Ser Ile Met Arg Leu Thr Ile Ser Tyr Leu
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Arg Met His Arg Leu Cys Ala Ala Gly Glu Trp Asn Gln Val Gly Ala
 65                  70                  75                  80

Gly Gly Glu Pro Leu Asp Ala Cys Tyr Leu Lys Ala Leu Glu Gly Phe
                 85                  90                  95

Val Met Val Leu Thr Ala Glu Gly Asp Met Ala Tyr Leu Ser Glu Asn
            100                 105                 110

Val Ser Lys His Leu Gly Leu Ser Gln Leu Glu Leu Ile Gly His Ser
        115                 120                 125

Ile Phe Asp Phe Ile His Pro Cys Asp Gln Glu Glu Leu Gln Asp Ala
    130                 135                 140

Leu Thr Pro Gln Gln Thr Leu Ser Arg Arg Lys Val Glu Ala Pro Thr
145                 150                 155                 160

Glu Arg Cys Phe Ser Leu Arg Met Lys Ser Thr Leu Thr Ser Arg Gly
                165                 170                 175

Arg Thr Leu Asn Leu Lys Ala Ala Thr Trp Lys Val Leu Asn Cys Ser
            180                 185                 190

Gly His Met Arg Ala Tyr Lys Pro Pro Ala Gln Thr Ser Pro Ala Gly
        195                 200                 205
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Ser Pro Asp Ser Glu Pro Pro Leu Gln Cys Leu Val Leu Ile Cys Glu
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Ala Ile Pro His Pro Gly Ser Leu Glu Pro Pro Leu Gly Arg Gly Ala
225                 230                 235                 240

Phe Leu Ser Arg His Ser Leu Asp Met Lys Phe Thr Tyr Cys Asp Asp
                245                 250                 255

Arg Ile Ala Glu Val Ala Gly Tyr Ser Pro Asp Asp Leu Ile Gly Cys
            260                 265                 270

Ser Ala Tyr Glu Tyr Ile His Ala Leu Asp Ser Asp Ala Val Ser Lys
        275                 280                 285

Ser Ile His Thr Leu Leu Ser Lys Gly Gln Ala Val Thr Gly Gln Tyr
    290                 295                 300

Arg Phe Leu Ala Arg Ser Gly Gly Tyr Leu Trp Thr Gln Thr Gln Ala
305                 310                 315                 320

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<212> PRT
<213> Homo sapiens

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Val Leu Tyr Gln Leu Ala His Thr Leu Pro Phe Ala Arg Gly Val Ser
         35                  40                  45

Ala His Leu Asp Lys Ala Ser Ile Met Arg Leu Thr Ile Ser Tyr Leu
     50                  55                  60

Arg Met His Arg Leu Cys Ala Ala Gly Glu Trp Asn Gln Val Gly Ala
 65                  70                  75                  80

Gly Gly Glu Pro Leu Asp Ala Cys Tyr Leu Lys Ala Leu Glu Gly Phe
                 85                  90                  95

Val Met Val Leu Thr Ala Glu Gly Asp Met Ala Tyr Leu Ser Glu Asn
            100                 105                 110

Val Ser Lys His Leu Gly Leu Ser Gln Leu Glu Leu Ile Gly His Ser
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Ile Phe Asp Phe Ile His Pro Cys Asp Gln Glu Glu Leu Gln Asp Ala
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Leu Thr Pro Gln Gln Thr Leu Ser Arg Arg Lys Val Glu Ala Pro Thr
145                 150                 155                 160

Glu Arg Cys Phe Ser Leu Arg Met Lys Ser Thr Leu Thr Ser Arg Gly
                165                 170                 175

Arg Thr Leu Asn Leu Lys Ala Ala Thr Trp Lys Val Leu Asn Cys Ser
            180                 185                 190

Gly His Met Arg Ala Tyr Lys Pro Pro Ala Gln Thr Ser Pro Ala Gly
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Ser Pro Asp Ser Glu Pro Pro Leu Gln Cys Leu Val Leu Ile Cys Glu
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Ala Ile Pro His Pro Gly Ser Leu Glu Pro Pro Leu Gly Arg Gly Ala
225                 230                 235                 240

Phe Leu Ser Arg His Ser Leu Asp Met Lys Phe Thr Tyr Cys Asp Asp
                245                 250                 255

Arg Ile Ala Glu Val Ala Gly Tyr Ser Pro Asp Asp Leu Ile Gly Cys
            260                 265                 270

Ser Ala Tyr Glu Tyr Ile His Ala Leu Asp Ser Asp Ala Val Ser Lys
        275                 280                 285

Ser Ile His Thr Leu Leu Ser Lys Gly Gln Ala Val Thr Gly Gln Tyr
    290                 295                 300

Arg Phe Leu Ala Arg Ser Gly Gly Tyr Leu Trp Thr Gln Thr Gln Ala
305                 310                 315                 320

Thr Val Val Ser Gly Gly Arg Gly Pro Gln Ser Glu Ser Ile Val Cys
                325                 330                 335

Val His Phe Leu Ile Ser Gln Val Glu Glu Thr Gly Val Val Leu Ser
            340                 345                 350

Leu Glu Gln Thr Glu Gln His Ser Arg Arg Pro Ile Gln Arg Gly Ala
        355                 360                 365

Pro Ser Gln Lys Asp Thr Pro Asn Pro Gly Asp Ser Leu Asp Thr Pro
    370                 375                 380

Gly Pro Arg Ile Leu Ala Phe Leu His Pro Pro Ser Leu Ser Glu Ala
385                 390                 395                 400

Ala Leu Ala Ala Asp Pro Arg Arg Phe Cys Ser Pro Asp Leu Arg Arg
                405                 410                 415

Leu Leu Gly Pro Ile Leu Asp Gly Ala Ser Val Ala Ala Thr Pro Ser
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Thr Pro Leu Ala Thr Arg His Pro Gln Ser Pro Leu Ser Ala Asp Leu
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Pro Asp Glu Leu Pro Val Gly Thr Glu Asn Val His Arg Leu Phe Thr
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Ser Gly Lys Asp Thr Glu Ala Val Glu Thr Asp Leu Asp Ile Ala Gln
465                 470                 475                 480

Asp Ala Asp Ala Leu Asp Leu Glu Met Leu Ala Pro Tyr Ile Ser Met
                485                 490                 495

Asp Asp Asp Phe Gln Leu Asn Ala Ser Glu Gln Leu Pro Arg Ala Tyr
            500                 505                 510

His Arg Pro Leu Gly Ala Val Pro Arg Pro Arg Ala Arg Ser Phe His
        515                 520                 525

Gly Leu Ser Pro Pro Ala Leu Glu Pro Ser Leu Leu Pro Arg Trp Gly
    530                 535                 540

Ser Asp Pro Arg Leu Ser Cys Ser Ser Pro Ser Arg Gly Asp Pro Ser
545                 550                 555                 560

Ala Ser Ser Pro Met Ala Gly Ala Arg Lys Arg Thr Leu Ala Gln Ser
                565                 570                 575

Ser Glu Asp Glu Asp Glu Gly Val Glu Leu Leu Gly Val Arg Pro Pro
            580                 585                 590

Lys Arg Ser Pro Ser Pro Glu His Glu Asn Phe Leu Leu Phe Pro Leu
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625                 630


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<211> 648
<212> PRT
<213> Homo sapiens

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Tyr Leu Lys Ala Leu Glu Gly Phe Val Met Val Leu Thr Ala Glu Gly
         35                  40                  45
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Asp Met Ala Tyr Leu Ser Glu Asn Val Ser Lys His Leu Gly Leu Ser
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Gln Leu Glu Leu Ile Gly His Ser Ile Phe Asp Phe Ile His Pro Cys
 65                  70                  75                  80

Asp Gln Glu Glu Leu Gln Asp Ala Leu Thr Pro Gln Gln Thr Leu Ser
                85                  90                  95

Arg Arg Lys Val Glu Ala Pro Thr Glu Arg Cys Phe Ser Leu Arg Met
            100                 105                 110

Lys Ser Thr Leu Thr Ser Arg Gly Arg Thr Leu Asn Leu Lys Ala Ala
        115                 120                 125

Thr Trp Lys Val Leu Asn Cys Ser Gly His Met Arg Ala Tyr Lys Pro
    130                 135                 140

Pro Ala Gln Thr Ser Pro Ala Gly Ser Pro Asp Ser Glu Pro Pro Leu
145                 150                 155                 160

Gln Cys Leu Val Leu Ile Cys Glu Ala Ile Pro His Pro Gly Ser Leu
                165                 170                 175

Glu Pro Pro Leu Gly Arg Gly Ala Phe Leu Ser Arg His Ser Leu Asp
            180                 185                 190

Met Lys Phe Thr Tyr Cys Asp Asp Arg Ile Ala Glu Val Ala Gly Tyr
        195                 200                 205

Ser Pro Asp Asp Leu Ile Gly Cys Ser Ala Tyr Glu Tyr Ile His Ala
    210                 215                 220

Leu Asp Ser Asp Ala Val Ser Lys Ser Ile His Thr Leu Leu Ser Lys
225                 230                 235                 240

Gly Gln Ala Val Thr Gly Gln Tyr Arg Phe Leu Ala Arg Ser Gly Gly
                245                 250                 255

Tyr Leu Trp Thr Gln Thr Gln Ala Thr Val Val Ser Gly Gly Arg Gly
            260                 265                 270

Pro Gln Ser Glu Ser Ile Val Cys Val His Phe Leu Ile Ser Gln Val
        275                 280                 285

Glu Glu Thr Gly Val Val Leu Ser Leu Glu Gln Thr Glu Gln His Ser
    290                 295                 300

Arg Arg Pro Ile Gln Arg Gly Ala Pro Ser Gln Lys Asp Thr Pro Asn
305                 310                 315                 320

Pro Gly Asp Ser Leu Asp Thr Pro Gly Pro Arg Ile Leu Ala Phe Leu
                325                 330                 335

His Pro Pro Ser Leu Ser Glu Ala Ala Leu Ala Ala Asp Pro Arg Arg
            340                 345                 350
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Phe Cys Ser Pro Asp Leu Arg Arg Leu Leu Gly Pro Ile Leu Asp Gly
        355                 360                 365

Ala Ser Val Ala Ala Thr Pro Ser Thr Pro Leu Ala Thr Arg His Pro
    370                 375                 380

Gln Ser Pro Leu Ser Ala Asp Leu Pro Asp Glu Leu Pro Val Gly Thr
385                 390                 395                 400

Glu Asn Val His Arg Leu Phe Thr Ser Gly Lys Asp Thr Glu Ala Val
                405                 410                 415

Glu Thr Asp Leu Asp Ile Ala Gln Asp Ala Asp Ala Leu Asp Leu Glu
            420                 425                 430

Met Leu Ala Pro Tyr Ile Ser Met Asp Asp Asp Phe Gln Leu Asn Ala
        435                 440                 445

Ser Glu Gln Leu Pro Arg Ala Tyr His Arg Pro Leu Gly Ala Val Pro
    450                 455                 460

Arg Pro Arg Ala Arg Ser Phe His Gly Leu Ser Pro Pro Ala Leu Glu
465                 470                 475                 480

Pro Ser Leu Leu Pro Arg Trp Gly Ser Asp Pro Arg Leu Ser Cys Ser
                485                 490                 495

Ser Pro Ser Arg Gly Asp Pro Ser Ala Ser Ser Pro Met Ala Gly Ala
            500                 505                 510

Arg Lys Arg Thr Leu Ala Gln Ser Ser Glu Asp Glu Asp Glu Gly Val
        515                 520                 525

Glu Leu Leu Gly Val Arg Pro Pro Lys Arg Ser Pro Ser Pro Glu His
    530                 535                 540

Glu Asn Phe Leu Leu Phe Pro Leu Ser Leu Ser Phe Leu Leu Thr Gly
545                 550                 555                 560

Gly Pro Ala Pro Gly Ser Leu Gln Asp Pro Thr Glu Leu Thr Gln Phe
                565                 570                 575

Leu Leu Ser Val Leu Ser Phe Pro Ile Leu Asp Pro Tyr Pro Leu Gly
            580                 585                 590

Cys Ala Ala Pro Gly Leu His Ala Ser Pro Phe Ser Leu Pro Thr Ile
        595                 600                 605

Ser Val Pro Gln Asn Pro Leu His Phe Pro Pro Gln Pro Ser Arg His
    610                 615                 620

Ala Leu Thr Leu Thr Leu Pro His Met Phe Gly Ala Pro Gly Ala Pro
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OIPE IAP44
APR 09 2007
PATENT & TRADEMARK OFFICE

<210> 6
<211> 1709
<212> DNA
<213> Artificial Sequence

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<223> Description of Artificial Sequence:HIF3a cDNA of
splice variant 1

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<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:HIF3alpha cDNA
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accaaaaaaa aaaaaaaaa 2239

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<211> 2082
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:HIF3alpha cDNA
of splice variant 3

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aagcctgatc ttctagtttc actaatgggt attaaaaacc tctgcagtga actgagattg 2040
cgccactgca ccccagcatg agcgacagaa tgggaccttg tc 2082

<210> 9
<211> 2595
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:HIF3alpha cDNA
of splice variant 5

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gcggcccgca gccggcgcag ccaggagacc gaggtgctgt accagctggc tcacacgctg 180
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gccgagggag acatggctta cctgtcggag aatgtcagca aacacctggg cctcagtcag 420
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caggacgccc tgacccccca gcagaccctg tccaggagga aggtggaggc ccccacggag 540
cggtgcttct ccttgcgcat gaagagtacg ctcaccagcc gcgggcgcac cctcaacctc 600
aaggcggcca cctggaaggt gctgaactgc tctggacata tgagggccta caagccacct 660
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cttggtaggc accag 2595

<210> 10
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:primer for
HIF3a splice variant 1

<400> 10
gggctcaagt gatcctccta ctt 23

<210> 11
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:primer for
HIF3a splice variant 1

<400> 11
catgatggca catagctgca gt 22

<210> 12
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:primer for

HIF3a splice variant 2

<400> 12
tttgcgtgaa cctctgctta ag 22

<210> 13
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:primer for HIF3a splice variant 2

<400> 13
caccatgcca ggccaaat 18

<210> 14
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:primer for HIF3a splice variant 3

<400> 14
tctctggccc tcattaccta gct 23

<210> 15
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:primer for HIF3a splice variant 3

<400> 15
ctgtatgacc ctcaaccagc c 21

<210> 16
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:primer for HIF3a splice variant 5

<400> 16
actcttggtc tcccacagga aa 22

<210> 17
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:primer for
HIF3a splice variant 5

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aacagagcga gcagtgcctt 20

<210> 18
<211> 20
<212> DNA
<213> Artificial Sequence

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<223> Description of Artificial Sequence:primer for the
cyclophilin B gene

<400> 18
actgaagcac tacgggcctg 20

<210> 19
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:primer for the
cyclophilin B gene

<400> 19
agccgttggt gtctttgcc 19

<210> 20
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:primer for the
gene of the ribosomal protein S9

<400> 20
ggtcaaattt accctggcca 20

<210> 21
<211> 22
<212> DNA
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<220>
<223> Description of Artificial Sequence:primer for the gene of the ribosomal protein S9

<400> 21
tctcatcaag cgtcagcagt tc 22

<210> 22
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:primer for the beta-actin gene

<400> 22
tggaacggtg aaggtgaca 19

<210> 23
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:primer for the beta-actin gene

<400> 23
ggcaagggac ttcctgtaa 19

<210> 24
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:primer for the GAPDH gene

<400> 24
cgtcatgggt gtgaaccatg 20

<210> 25
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:primer for the GAPDH gene

<400> 25
gctaagcagt tggtggtgca g 21

<210> 26
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:primer for the transferrin receptor gene

<400> 26
gtcgctggtc agttcgtgat t 21

<210> 27
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:primer for the transferrin receptor gene

<400> 27
agcagttggc tgttgtacct ctc 23

<210> 28
<211> 1353
<212> DNA
<213> Homo sapiens

<400> 28
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<210> 29
<211> 1029
<212> DNA
<213> Homo sapiens

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<210> 30
<211> 1899
<212> DNA
<213> Homo sapiens

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<210> 31
<211> 1947
<212> DNA
<213> Homo sapiens

<400> 31
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